PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Form PCT/IPEA/416	
P2002 0581 PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/DK2003/000260	16-04-2003	19-04-2002
International Patent Classification (IPC) or national classification and IPC		
H02M1/15, G05F1/563		
Applicant		
Linak A/S et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
07-11-2003	19-07-2004
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/DK2003/000260

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/DK2003/000260

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-6	NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The claimed invention relates to a drive unit for a DC-motor. The object of the invention is to minimise the occurrence of acoustic noise in a certain application. This is accomplished by removing the ripple from the output voltage. More precisely, the inventive idea appears to be to add a DC/DC-converter adapted to fine voltage regulation to a coarser regulator.

Documents cited in the International Search Report:

D1) US 6037755 A
D2) GB 2207565 A
D3) EP 1079511 A
D4) EP 0508664 A
D5) EP 0534422 A

Additional documents:

D6) US 5239453 A
D7) EP 0550167 A2

D1, D2, D4 and D5 disclose several DC/DC-converters. D3 disclose a DC-motor drive intended for adjustment of furniture.

D6 show a DC/DC-converter comprising one coarse regulator and one fine regulator (Fig. 1; column 2, line 60 - column 4, line 1). The DC voltage source has low ripple, is small and is inexpensive to produce (column 2, lines 1-3).

D7 discloses a power supply comprising a linear series

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Independent claims 1, 5 and 6 are not clear and concise. There is a first control "to compensate for the loss in the motor" and a second control "adapted to remove the ripple in the voltage". It is not clear how those two desirable effects are obtained. Further, the meaning of the terms "long period of time" and "short period of time" is far too vague.

Claim 2 is difficult to interprete. It is assumed that claim 2 is intended to form a general definition for a DC/DC-converter.

Claims 3 and 4 appears to be rather complex ways to define that a Buck-converter or a Boost-converter may be used.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

regulator followed by a resonant DC/DC-converter (figs. 1-3).

The current claims 1-6 are not clear and concise (see Box VIII). However, it is deemed possible to make a statement concerning what is assumed to be the meaning of the claims.

The invention according to independent claim 1 may possibly differ somewhat from the technique disclosed in D6 or D7. However, booth D6 and D7 disclose converters having a first, slower regulator to which the output voltage is fed back and a second, faster regulator embodied as a DC/DC-converter. Booth converters minimise the ripple in the output voltage and are considered to be relatively simple. Since the converters shown in D6 and D7 solves any possible problems that may be solved by the arrangement defined in claim 1, the invention according to independent claim 1 is not considered to involve an inventive step.

Independent claim 5 actually defines that the invention is used for a DC-motor. It is obvious for a person skilled in the art to realise that a DC-motor may be equipped with any previously known DC-power supply in order to obtain whatever ripple level that is desired. Independent claim 6 defines that a structure, which may be some kind of furniture and which may include a DC-motor, has a power supply similar to the one defined in claim 1. Neither in this case does the act of replacing a rather crude power supply with a somewhat more sophisticated supply cause any unexpected technical effect. Consequently, the invention according to independent claims 5 and 6 is not considered to involve an inventive step.

Claims 2-4 are assumed to define already known DC/DC-converters and these claims do not add any inventive matter.

The invention according to claims 1-6 is not considered to involve an inventive step. It is novel and it is industrially applicable.